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NASA Procedural Requirements

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2007**COMPLIANCE IS MANDATORY**[Printable Format \(PDF\)](#)

Subject: Facilities Maintenance Management w/ Change 1 (4/21/04)**Responsible Office: Facilities Engineering and Real Property Division**

[| TOC](#) | [Change](#) | [Preface](#) | [Chp1](#) | [Chp2](#) | [Chp3](#) | [Chp4](#) | [Chp5](#) | [Chp6](#) | [Chp7](#) | [Chp8](#) | [Chp9](#) |
[Chp10](#) | [Chp11](#) | [Chp12](#) | [AppdxA](#) | [AppdxB](#) | [AppdxC](#) | [AppdxD](#) | [AppdxE](#) | [AppdxF](#) | [AppdxG](#) |
[AppdxH](#) | [AppdxI](#) | [Fig12-2](#) | [FigC-6](#) | [FigC-7](#) | [FigC-8](#) | [FigD-1](#) | [FigD-2](#) | [FigD-3](#) | [FigD-4](#) |
[FigD-5](#) | [FigD-6](#) | [FigD-7](#) | [FigD-8](#) | [FigD-9](#) | [FigD-10](#) | [FigD-11](#) | [FigD-12](#) | [ALL](#) |

CHAPTER 2. Resources Management

2.1 Introduction

This chapter discusses resources management as it relates to facilities maintenance. It covers NASA directives, policy, resources management requirements, maintenance funding levels, the Program Operating Plan (POP), and reimbursable funds.

2.2 Publications

Table 2-1 lists NASA Headquarters publications that apply to facilities maintenance resources management.

<u>Publication</u>	<u>Title</u>
NPD 7330.1	Approval Authorities for Facility Projects.
NPR 8800.15	Real Estate Management Program Implementation Manual.
NPR 8820.2	Facility Project Implementation Handbook.
NPD 8831.1	Management of Facilities Maintenance.
FMM Volume 9100	NASA Financial Management Manuals, Agencywide Coding Structure.

Table 2-1. NASA Headquarters Instructions, Procedures Guides, and Manuals

2.3 Resources Management

Although Centers manage their resources in various ways, there are requirements that create similarities among all Centers. The following are the primary ones:

2.3.1. Facilities Maintenance Cost Account Codes. NASA Headquarters must report to OMB and to the Congress on how NASA spends its facilities maintenance funds. FMS codes have been established to do this. They are defined in the NASA Financial Management Manual - Agencywide Coding Structure (FMM 9120, Part VI, Fiscal and Statistical Coding, Section 9121-52A, Coding for Functional Management Functions). Centers will use the FMS codes in the NASA Financial Management Manual (A partial listing is shown in Table 2-2) for accounting and reporting to NASA Headquarters on facilities maintenance funds. In addition to utilizing the FMS codes, Centers

must establish methods in their CMMS to capture all of the costs associated with each of the nine facilities maintenance work elements listed in paragraph 1.5.1.3(b) in order to manage and analyze their facilities maintenance programs.

**FUNCTIONAL MANAGEMENT SYSTEM (FMS) CODES
FOR FACILITIES MAINTENANCE AND PARTIAL
LISTING OF OTHER RELATED AREAS**

<u>CODE</u>	<u>TITLE</u>
20 XX XX	Facilities Services
20 02 XX	Facilities Management
20 02 01	Facilities Management (Nonfacilities Maintenance Related)
20 02 02	Facilities Management (Facilities Maintenance Related)
20 04 XX	Facilities Maintenance
20 04 01*	Maintenance
20 04 02	Grounds (Includes Exterior Pest Control)
20 05 XX	R&D/SFCDC and R&PM/OIG Funded Facilities and Environmental Work (Service Requests, Repairs, Modifications, and Minor Construction)
20 05 01	Routine Facilities Work (Other than Maintenance and Repair)
20 05 03	Environmental Compliance and Restoration Work (Institutional)
20 05 04*	Routine Facilities Work (Repair) (Includes Facilities Repair Trouble Calls)
20 05 23	Environmental Compliance and Restoration Work (Program Unique)
20 06 XX	Utilities
20 06 07	Central Utility Plant Operations & Maintenance
20 07 XX	Custodial Services
20 07 01	Janitorial Services (Includes Interior Pest Control)

20 09
XX Facilities-Related Services and Noncollateral Equipment
20 09 Security
02 Fire Protection
20 09 Facilities-Related Maintenance and Replacement of
03 Noncollateral Equipment
20 09
04

**(See NASA FMM Volume 9100 for latest version of
these codes)**

***Functional Management System codes that are a part
of the 2- to 4-percent-of-CRV calculations
recommended by the NRC.**

Table 2-2. Functional Management System Codes for Facilities Maintenance

2.3.2. Fund Sources. FMM 9100 defines the standard fund sources. The possible fund sources are listed in FMM 9100, Section 9121- -52A, Coding for Functional Management Functions. POP's require that budget requests be broken down by fund source.

2.3.3. Funding Thresholds. NPR 8820.2, Facility Project Implementation Handbook, specifies facility project funding sources and thresholds. Table 2-3 summarizes the facilities maintenance work type funding thresholds.

2.4 Maintenance Funding Levels

In NPD 8831.1, Management of Facilities Maintenance, NASA Headquarters recognizes the annual funding level of 2- to 4-percent-of- CRV recommended by the Federal Facilities Council (formerly the Building Research Board), National Research Council (Appendix B, resource 35), as a reasonable funding target necessary to maintain facilities in a steady-state condition. This level is recognized as an adequate standard until an independent analysis of facilities condition assessment trends indicates otherwise.

2.4.1. Funding Level Scope. Note that only Center-funded work of facilities maintenance and repairs should be included in the 2- to 4-percent-of-CRV annual funding level. Figure 2-1 identifies the facilities maintenance expenditures that are to be allocated to the 2- to 4-percent-of-CRV goal. The percentage goal does not include BMAR, Service Requests because they are for new work, grounds care, central utility plant O&M, and Nonfacilities Maintenance Work as described in paragraph 2.4.2.

2.4.2. Nonfacilities Maintenance Work

2.4.2.1. The following types of nonfacilities maintenance work, although related to facilities maintenance and sometimes performed by facilities maintenance organizations, are not counted toward the NRC-recommended 2- to 4-percent-of-CRV calculations. These types of work should be costed to their own FMS codes in the NASA Financial Management Manual.

2.4.2.2. Examples of these types of work are as follows:

- a. Custodial and interior pest control.
- b. Refuse collection and disposal.
- c. Operations such as fire protection and security.
- d. Mobile equipment operation and maintenance.
- e. Environmental operations, remediation, and disposal.

**FACILITIES MAINTENANCE
WORK ELEMENTS**

**CENTER
FUNDING LIMITATIONS**

Preventive Maintenance. Predictive Testing & Inspection.	
Grounds Care.	Any dollar amount
Programmed Maintenance.	Any dollar amount
Repair: 1, 2, 5	Any dollar amount
- Routine Facilities Work.	
- Trouble Calls (Facilities Repair). ^{1,2,5}	Not to exceed \$500,000 ⁵
Replacement of Obsolete Items. ^{1,2,5}	Not to exceed \$500,000 ⁵
Service Requests (A New Work Requirement) ^{1,3,5}	Not to exceed \$500,000 ⁵
- Routine Facilities Work ⁵ .	Any dollar amount
Central Utility Plant Operations & Maintenance. ^{4,5}	

Notes	
1. Limitation is per project or per incident. For facilities work estimated to cost \$50,000 or more, NASA Form 1509 documentation is required.	
2. Costed under Routine Facilities Work functional code 20 05 04.	
3. Costed under Routine Facilities Work functional code 20 05 01.	
4. Costed under functional code 20 06 07.	
5. All Facility Projects exceeding \$500,000 must have congressional approval.	

Table 2-3. Facilities Maintenance Funding Thresholds

-
- f. Research and Development (R&D) shop support such as model fabrication.
 - g. Management and supervision overhead.
 - h. Maintenance of noncollateral equipment (NASA Equipment Management Systems (NEMS) tagged equipment).
 - i. Facilities alterations.
 - j. Facilities construction.

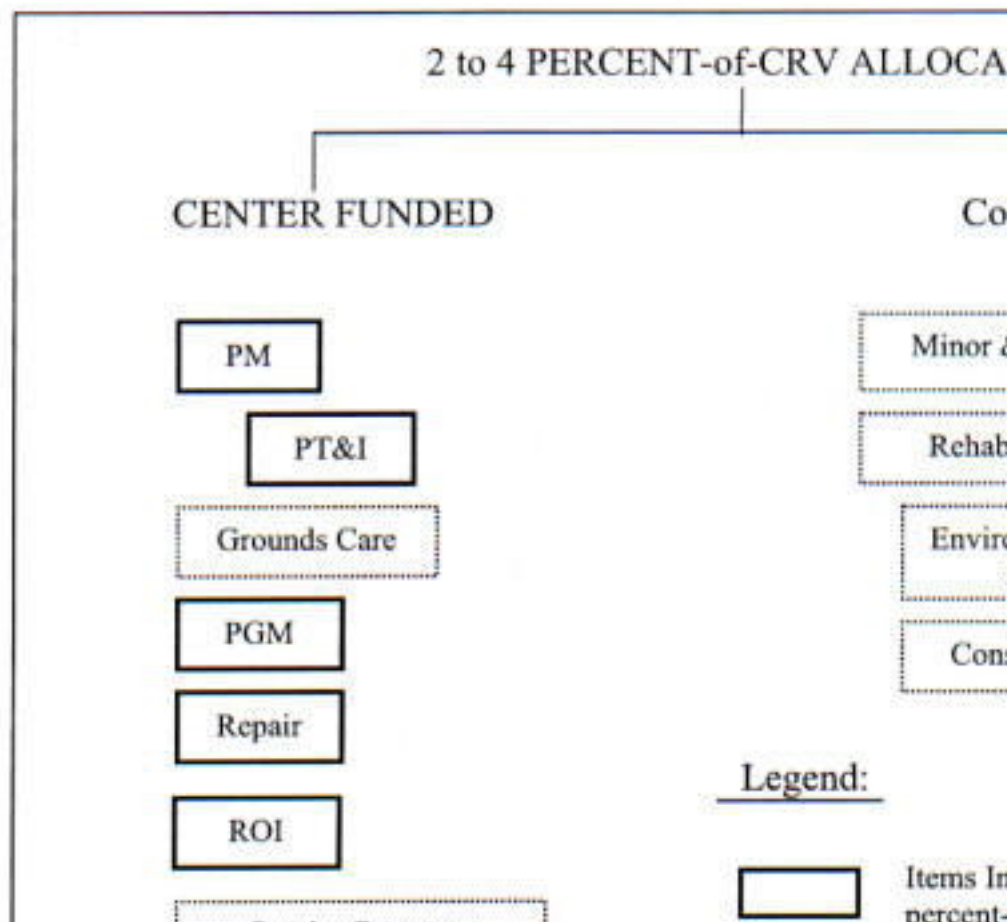


Figure 2-1. Expenditures Allocable to 2- to 4-Percent-of-CRV Standard

2.4.3. Current Replacement Value (CRV). NASA Headquarters requires updates to CRV's early each calendar year for CRV data as of December 31 of the prior year. The CRV's are to be calculated using the NASA Real Property Inventory (RPI) software program and escalating facilities and collateral equipment acquisition costs and incremental book value changes to the current year using the Engineering News Record (ENR) annual average 20-city building cost index (BCI) factors. The book value of each facility is continuously updated by the cost of any additions, modifications, or demolition of \$1,000 or more. The CRV calculations are made by indexing the construction cost using the BCI value for the year of construction, indexing each change in book value using the BCI value for the year in which the change was made, and mathematically summing the results. Book values and the resulting CRV's are not changed by maintenance and repair actions. Noncollateral equipment is not included in the CRV.

2.5 Facilities Maintenance Budget

POP's (budgets) are time-phased work programs expressed in terms of dollars and other resources required to accomplish NASA objectives for the budget year. They serve as a basis for developing the NASA operating budget to support apportionment requests to OMB, to distribute resource authority within NASA, and to plan for the orderly and efficient use of resources. The facilities maintenance organization's budget is an integral part of the POP. The following paragraphs provide insight into the process and how maintenance requirements are included.

2.5.1. POP (Budget) Call. A POP (budget) call is a request from NASA Headquarters to NASA Centers and Jet Propulsion Laboratory (JPL) for budget information. The call begins each year in February when the NASA Chief Financial Officer (CFO)/Comptroller requests input from the Enterprise Associate Administrators and Functional Staff Office Associate Administrators, including the Director, Facilities Engineering & Real Property Division (Code OJX), to develop the budget call to the Enterprise-related facilities. In February/March, the CFO/Comptroller integrates the budget guidance received from the Institutional Program Offices (IPO) and the Functional Staff Offices into a single POP call to the NASA Centers and JPL. Although POP (budget) guidance may vary from year to year, the basic budget content and format is relatively constant. A facilities maintenance organization is involved in the development of information to be included in response to the POP call.

2.5.2. POP Fiscal Years. Each annual POP (budget) covers a 7-year period consisting of past year, current year, and budget year defined as follows plus 4 future years:

- a. Prior Year. The fiscal year immediately preceding the current year. Prior year costs are actual, not estimated.
- b. Current Year. The fiscal year immediately preceding the budget year.
- c. Budget Year. The fiscal year for which estimates are being submitted.

2.5.3. Requirements Development and Costing

2.5.3.1. Paragraph 2.3.1, Facilities Maintenance Cost Account Codes, requires that all Centers establish and maintain a facilities maintenance cost accounting system with all work classified. One of the uses of the classification is for budgeting. The annual budget call requests budget estimates. Thus, it is possible to prepare the budget by aggregating the actual expenditures of prior-year historical data and the current-year-to-date accounting data. The current-year-to-date figures can then be extrapolated to the full current year using the current-year Annual Work Plan (AWP). The budget year requirements can then be projected by comparing the prior and current-year work requirements with the budget year from the 5-year Facilities Maintenance Plan and adjusting the estimates using the standard inflation factors supplied by NASA Headquarters. Through this process, information is available for preparing the budget documentation for submittal.

2.5.3.2. In accordance with the requirements of paragraph 2.4, Maintenance Funding Levels, Centers should, as a goal, work toward a budget for facilities maintenance and repair of 2- to 4-percent-of-CRV funding. Figure 2-1 identifies the facilities maintenance expenditures that are to be allocated to the 2- to 4-percent-of-CRV goal. Per paragraph 2.4.1, Funding Level Scope, the 2- to 4-percent does not include BMAR, Service Requests, grounds care, central utility plant O&M, and Nonfacilities Maintenance Work as described in paragraph 2.4.2, Nonfacilities Maintenance Work.

2.5.3.3. Because estimated funding requirements are prepared 14 to 19 months in advance of the budget year, many things can occur to change the budget estimates before POP's are executed. The following are some examples:

- a. Congressional decisions reflected in the final authorization and appropriations acts.
- b. Changes in the Center resource requirements (possibly due to emergency conditions).
- c. Restraints imposed by NASA Headquarters.

2.5.4. POP (Budget) Submittal

The Centers and JPL submit their response to the POP requests to the IPO - Associate Administrators for Space Flight (Code M), Aerospace Technology (Code R), Space Science (Code S), and Earth Science (Code Y) - to which they are assigned. The facilities are assigned to Codes M, R, S, and Y as follows:

2.5.4.1. Code M

a. Johnson Space Center (JSC)

- (1) Downey
- (2) Palmdale
- (3) White Sands Test Facility (WSTF)
- (4) Space Network Ground Terminals, White Sands
- (5) Reserved.
- (a) Reserved.
- (b) Reserved.

b. Kennedy Space Center (KSC)

c. Marshall Space Flight Center (MSFC)

- (1) Michoud Assembly Facility (MAF)
- (2) Santa Susana Field Laboratory (SSFL)
- (3) Thiokol, Wasatch Division (THKL)

d. Stennis Space Center (SSC)

e. Reserved.

- (1) Reserved.
- (2) Reserved.
- (3) Reserved.

2.5.4.2. Code R

a. Ames Research Center (ARC)

- b. Dryden Flight Research Center (DFRC)
- c. Langley Research Center (LaRC)
- d. Glenn Research Center (GRC)
 - (1) Plum Brook Station (PBS)

2.5.4.3. Code S

- a. Jet Propulsion Laboratory (JPL) - (A NASA-owned but contractor-operated facility)
 - (1) Table Mountain Observatory

2.5.4.4. Code Y

- a. Goddard Space Flight Center (GSFC)
 - (1) Wallops Flight Facility (WFF)
 - (2) National Scientific Balloon Facility (NSBF)

2.6 Reimbursable Services

Many Center's facilities maintenance organizations perform work on facilities occupied by agencies other than NASA for which the cost is reimbursed by the occupying agencies. They also perform nonfacilities maintenance work that should be reimbursed by the requesting customers. For specific information on policies and procedures for obtaining reimbursement related to NASA facilities occupied by another Agency see FMM 9090. This reimbursable work is not included in the annual facilities maintenance budget that the Centers submit to NASA Headquarters. However, reimbursable work should be included in the Center AWP's. The POP's and the AWP's address the total facilities maintenance workload, regardless of fund source.

2.6.1. Types of Reimbursable Services

2.6.1.1. Customer Requested Work. Centers should perform the following types of work with funds provided by the customer requesting the work, so as not to impact the limited funds available for facilities maintenance.

- a. Construction, addition, and modification work below the \$500,000 Construction of Facilities (CoF) threshold.
- b. Service Request work.
- c. Nonfacilities maintenance work (see paragraph 2.4.2, Nonfacilities Maintenance Work).

2.6.1.2. Tenant and other Occupying Agencies Services. The Centers provide three basic types of services to tenants and other occupying agencies on a reimbursable basis. These services are described in the following paragraphs:

a. Occupancy Services. Occupancy services are essential, Center-wide support services. Services such as facilities maintenance and janitorial services are a function of the square footage of the buildings occupied. Other services may be related to the number of personnel resident at the Center. Typically, the rate for occupancy services should be constant during each fiscal year to allow Center customers to budget for the services. The interagency agreements should state when the rates are scheduled to change.

b. Demand Services. Demand services provide technical support or specific deliverable products not available within the capabilities of the customer. Typically, demand services are specifically requested by the user and are user unique. Each demand service is separately priced; if possible, the unit price should be constant during each fiscal year to allow Center customers to estimate their fund requirements and to budget for the funds. Demand services are often requested in writing and are classified by specific functional area. The following are examples of demand services:

- (1) Service Requests.
- (2) Engineering design services.
- (3) Construction projects.
- (4) Heavy equipment services.

c. Other Services. Other services are those paid directly by the customer at the time of use, such as food services, or billed periodically based on use, such as metered utilities. Few, if any, facilities maintenance services are billed at the time of use.

2.6.2. Cost Allocation. The determination of reimbursable costs should be based on the concept of full cost sharing. This concept provides for common cost sharing of services. Therefore, the costs charged to each tenant should

directly reflect the tenant's proportion of the total cost to NASA for the services.

2.6.2.1. Occupancy Services

a. The per-unit rates charged for occupancy services should be the same for all occupants, both tenants and NASA activities, for like services. The annual charges should be computed from prior-year costs with inflationary and expected use-change adjustments. Occupancy services are usually provided by the facilities maintenance organization or by facilities support services contractors.

b. Occupancy services are separated into those applicable to the employee population and those applicable to the floor space occupied. These costs are calculated generally as follows:

(1) Population. A projected fiscal year total of all civil service and contractor employees is developed for each occupying organization. The total portion of the shared cost associated with personnel is divided by the total of all Center personnel. The result is the fiscal year per-person rate, which is applied to each occupant.

(2) Floor Space. The square footage should be summed for each occupant by the type of space occupied as per the following example:

(i) Type I - Air-conditioned offices, laboratories, and technical spaces.

(ii) Type II - Nonair-conditioned shops, work areas, or technical spaces.

(iii) Type III - Nonair-conditioned warehouses and storage facilities.

c. The total shared cost associated with floor space is divided by the weighted sum of all three types of floor space to determine the Type III base rate. The Type I and II base rates are determined by multiplying the base rate by the weighting factor for each type. The square footage totals are multiplied by the respective rates to determine the cost for each occupant. The weighting factors are determined historically from the actual cost of cleaning and maintaining each type of space.

d. Personnel and floor space costs are then added together to determine the total occupancy cost.

2.6.2.2. Demand Services. The cost to tenants for demand services is generally developed by adding a surcharge to the incremental Center costs incurred by the demand service work order. Since the surcharges are an integral part of Center operational costs and are routinely expensed by the Centers, they are not identified separately and are not shown on reimbursable work orders. The standard surcharges developed by each Center should consider the full cost-sharing concept. However, some costs are borne by NASA, such as acquisition and depreciation of shop equipment, which do not enter the standard surcharge and therefore are not reimbursed by tenants because they are within the NASA institutional budget base. Typically, monthly billings for demand services either are sent to the tenants or are charged to standing accounts.

2.6.3. Interagency Agreements. While Memoranda of Agreement (MOA) are helpful in defining Center and tenant services and responsibilities, they are vital in the case of reimbursable services. MOA's avoid misunderstandings about how rates are determined and how bills are rendered, certified, and paid by the tenant. They are critical for long-range planning and budgeting because they enable the Centers to forecast their levels of reimbursement. In the case of facilities maintenance, the accuracy of the AWP depends on the accuracy of the level and type of reimbursable work defined in MOA's and other interagency agreements.

[TOC](#)	[Change](#)	[Preface](#)	[Chp1](#)	[Chp2](#)	[Chp3](#)	[Chp4](#)	[Chp5](#)	[Chp6](#)	[Chp7](#)	[Chp8](#)
[Chp9](#)	[Chp10](#)	[Chp11](#)	[Chp12](#)	[AppdxA](#)	[AppdxB](#)	[AppdxC](#)	[AppdxD](#)	[AppdxE](#)		
[AppdxF](#)	[AppdxF](#)	[AppdxF](#)	[AppdxF](#)	[Fig12-2](#)	[FigC-6](#)	[FigC-7](#)	[FigC-8](#)	[FigD-1](#)		
[FigD-2](#)	[FigD-3](#)	[FigD-4](#)	[FigD-5](#)	[FigD-6](#)	[FigD-7](#)	[FigD-8](#)	[FigD-9](#)	[FigD-10](#)		
[FigD-11](#)	[FigD-12](#)	[ALL](#)								

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